

### **REMARKS**

This responds to the Office Action mailed on September 21, 2007.

No claims are amended, no claims are canceled, and no claims are added. Thus, claims 1-4, 9-16 and 20-35 remain pending in this application.

### **Claim Objections**

Claims 20-26 were objected to for informalities. The Office Action, at paragraph 10, states:

Claims 20-23 and 26 recite 'a hearing aid comprising...a memory...a toggle device...a selector indicator...'. Figure 2 illustrates that the memory, processor, toggle device and selector are part of the apparatus (16) and not the hearing aid (14). Appropriate correction is required.

Applicant respectfully traverses this objection for at least the following reasons.

Applicant respectfully submits that Applicant's specification properly discloses the claimed embodiments. In the portion of the specification discussing FIG. 2, it is stated that:

In one embodiment the apparatus 16 and hearing aid 14 are discrete components. In another embodiment, the entire contents of apparatus 16 and hearing aid 14 are fully integrated into one single hearing aid package 52.

(specification page 9, lines 8-10). Therefore, Applicant respectfully submits that claims 20-23 and 26, reciting a hearing aid having among other things a memory, processor, toggle device and selector, are fully supported by the specification and drawings. Claims 24 and 25 depend on claim 23 and are believed to be in condition for allowance for the reasons stated with respect to claim 23.

Withdrawal of the objection to claims 20-26 is respectfully requested.

### **Information Disclosure Statement**

Applicant has not received an initialed Form 1449 for the Information Disclosure Statement filed September 8, 2003, and respectfully requests that this initialed form be returned with the Examiner's next action.

§103 Rejection of the Claims

*Claims 20-21, 23 and 26*

Claims 20-21, 23 and 26 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Weinfurtner et al. (US 6,035,050, "Weinfurtner") in view of Watanabe et al. (US 6,148,274, "Watanabe"). Applicant respectfully traverses the rejection for at least the following reasons.

It is respectfully submitted that the rejection fails to state a proper *prima facie* case of obviousness on several grounds. The rejection notes that Weinfurtner does not disclose a processor that ranks a hierarchy of a plurality of parent sets. The rejection then asserts:

Watanabe discloses an optimization adjusting method that uses a genetic algorithm (column 4, lines 42-65; column 42, lines 8-48; ranking data is implicit to how a genetic algorithm functions). Watanabe discloses using genetic algorithm and using mutation and crossover on at least one parent set (Watanabe, column 42, lines 8-48; Figures 67 and 69). It would have been obvious to modify Weinfurtner by using the optimal solution technique taught by Watanabe for the purpose of improving the hearing aid fit for a user.

Applicant respectfully traverses this assertion on several grounds. It is respectfully submitted that Watanabe does not relate to selection of pairs as provided by the present application. Watanabe's references to an "evaluation value" and "fitness" appears to be a form of ranking using many levels of fitness. The following is taken from Watanabe's column 24:

The evaluation value acquisition section 104, as previously described, calculates an evaluation value  $E_k$  for each solution vector  $p_k$  ( $k=1, \dots, n$ ) using a fitness function, for example, as shown by Expression 2.

[Mathematical Expression 2]

$$E_k = \frac{(w(q_k) - w'_{min})}{\sum_{k=1}^n (w(q_k) - w'_{min})}$$

where  $q_k$  represents a coordinate vector when the solution vector  $p_k$  is mapped in the original  $m$ -dimensional space, and  $w'_{min}$  indicates the smallest value of the function values  $w(q_k)$  when the solution vectors  $p_k$  in the set  $P$  are mapped back into the  $m$ -dimensional space coordinates, the function values being taken over all the solution vector sets obtained up to the  $l$ -th updates. As can be seen from Expression 2, the value obtained by subtracting the minimum function value in the solution vector sets so far obtained is normalized over all the solution vector sets. In the present embodiment, the problem can be regarded as the maximization problem that maximizes this evaluation value.

In the fitness calculating section 105, a value to be used to judge the fitness of each solution vector is calculated from the evaluation value calculated by the evaluation value acquisition section 104. Various functions can be considered for deriving the fitness  $f_k$ . In this example,  $f_k$  is made equal to  $E_k$ , which means that the fitness increases with increasing evaluation value, so that the problem can be treated as a maximum value estimation problem.

Applicant also traverses the combination of Weinfurter and Watanabe, since there is no teaching in Weinfurter or Watanabe of a system of comparison as taught in the specification or recited in the claims. Thus, the assertion of what would have been obvious to one of skill in the art is believed to be respectfully traversed.

With respect to independent claim 20, Applicant is unable to find among other things in the cited portions of the cited references, a teaching or suggestion of a hearing aid including a memory having a first population stored therein, the first population comprising a plurality of parent sets, each of the parent sets having at least one parameter, a toggle device for toggling between a first pair of the plurality of parent sets, a select indicator for selecting a preferred one set of the first pair, and a processor for ranking a hierarchy of the plurality of parent sets, as recited in claim 20.

With respect to independent claim 21, Applicant is unable to find among other things in the cited portions of the cited references, a teaching or suggestion of a hearing aid including a memory having a first population stored therein, the first population comprising a plurality of parent sets, each of the parent sets having at least one parameter, a toggle device for toggling

between a first pair of the plurality of parent sets, a select indicator for selecting a preferred one set of the first pair, and a processor for assigning a probability of selection by the select indicator to the plurality of parent sets, as recited in claim 21.

With respect to independent claim 23, Applicant is unable to find among other things in the cited portions of the cited references, a teaching or suggestion of a hearing aid including a memory having a first population stored therein, the first population comprising a plurality of parent sets, each of the parent sets having at least one parameter, a toggle device for toggling between a first pair of the plurality of parent sets, a select indicator for selecting a preferred one set of the first pair, and a genetic algorithm operator for performing one of mutation and crossover on at least one set of the plurality of parent sets thereby forming a child set, as recited in claim 23.

With respect to independent claim 26, Applicant is unable to find among other things in the cited portions of the cited references, a teaching or suggestion of a hearing aid including a memory having a first population stored therein, the first population comprising a plurality of parent sets, each of the parent sets having at least one parameter, a toggle device for toggling between a first pair of the plurality of parent sets, and a select indicator for selecting a preferred one set of the first pair, where the toggle device toggles between a plurality of pairs of the plurality of parent sets, further comprising a processor for converging the plurality of pairs to a single solution set, as recited in claim 26.

Applicant also respectfully submits that the rejection fails to address the claims in particularity and thereby fails to state a proper *prima facie* case of obviousness. The claims also recite limitations which are not addressed by the present rejection. The Office Action states that “(a)ll elements of claims 24 and 25 are comprehended by the rejection of claim 23.” Applicant respectfully traverses. Claims 24 and 25 depend from claim 23, and add additional limitations not found in claim 23. Specifically, claim 24 includes a genetic algorithm for replacing one of the plurality of parent sets in the first population with the child set thereby forming a second population, which Applicant is unable to find in the cited portions of the cited references. Claim 25 refers to a toggle device toggling between a second pair of sets selected from the second population, which Applicant is unable to find in the cited portions of the cited references. If a rejection of claims 24 and 25 is implied, it is hereby respectfully traversed.

Applicant respectfully requests reconsideration and allowance of claims 20-21, 23 and 26.

### *Claim 21*

Claim 21 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Weinfurtner in view of Chang et al. (US 6,925,555, "Chang"). Applicant respectfully traverses the rejection for at least the following reasons.

It is respectfully submitted that the rejection fails to state a proper *prima facie* case of obviousness on several grounds. The rejection correctly notes that Weinfurtner does not disclose a processor that assigns a probability of selection of the plurality of parent sets. The rejection then asserts:

Chang discloses using a genetic algorithm and assigning a probability of selection to a data set (column 5, lines 29-54). Genetic algorithms are used to approximate solutions to optimization problems. It would have been obvious to modify Weinfurtner by applying the probability of selection techniques as taught by Chang for the purpose of better optimizing the hearing aid fit for a user.

Applicant respectfully traverses this assertion on several grounds. It is respectfully submitted that Chang does not relate to hearing aid fitting as provided by the present application. In addition, Applicant also traverses the combination of Weinfurtner and Chang, since there is no teaching in Weinfurtner or Chang of a system of fitting as taught in the specification or recited in the claims. Further, Chang is non-analogous art, as it deals with a method of determining clock delay values. Applicant can find no mention in Chang of any application relating to hearing aids.

With respect to independent claim 21, Applicant is unable to find among other things in the cited portions of the cited references, a teaching or suggestion of a hearing aid including a memory having a first population stored therein, the first population comprising a plurality of parent sets, each of the parent sets having at least one parameter, a toggle device for toggling between a first pair of the plurality of parent sets, a select indicator for selecting a preferred one set of the first pair, and a processor for assigning a probability of selection by the select indicator to the plurality of parent sets, as recited in claim 21.

Applicant respectfully requests reconsideration and allowance of claim 21.

Allowable Subject Matter

Applicant acknowledges the allowance of claims 1-4, 9-16, 27-35.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 373-6912 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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Date

Jan. 22, 2008

By



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**CERTIFICATE UNDER 37 CFR 1.8:** The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: Mail Stop Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 22nd day of January 2008 (day after Federal holiday).

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